

REMARKS

Review and reconsideration on the merits are requested.

Claims 2, 6-8, 11-16 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,616,369 to Williams et al in view of U.S. Patent 4,700,080 to Fukaya et al. Fukaya et al was newly cited as disclosing the steps of executing a low power glow discharge to form a layer film and executing a high power glow discharge to form another layer film. The reason for rejection was that it would have been obvious to utilize in Williams et al the steps of executing a low power glow discharge and executing a high power glow discharge, which steps are said to be taught by Fukaya et al, in order to provide the proper heat for each coating layer.

The rejection should be withdrawn because Fukaya et al does not disclose the steps of executing a low power glow discharge to form a first CVD film on the surface of a substrate, and executing a high power glow discharge to form a second CVD film on the first CVD film as required by present claim 27. Therefore, there is no combination of Williams et al and Fukaya et al which could ever achieve the method of claim 27.

That is, as described in the passage at col. 17, lines 18-27 cited by the Examiner, Fukaya et al employs SiH₄ gas as a reaction gas (i.e., no oxidizing gas) and effects vacuum evaporation, first, with a high power output, and, next, with a low power output. Specifically, using a SiH₄ reaction gas, Fukaya et al deposited an underlying a-Si:H layer having a thickness of 400 Å on a substrate from plasma discharge of a SiH₄ gas at a discharge power of 120 W. Immediately thereafter, the input voltage was stepped down and the glow discharge was performed at a discharge power of 8 W (low power), to form an overlying a-Si:H layer having a thickness of 0.8 μm. Thus, Fukaya et al differs from the present invention not only with respect to the

reaction gas (no oxidizing gas is present, whereas present claim 27 requires an oxidizing gas in addition to a gas of an organometal), and also is directly opposite to the method of the present invention which requires changing the power output from a low power glow discharge to form a first CVD film on the surface of the substrate to a high power glow discharge to form a second CVD film on the first CVD film.

For instance, if the method taught by Fukaya et al were executed using a mixed gas of an organometallic gas and an oxidizing gas (which it is not), a layer of a metal oxide would be formed on the surface of the substrate at the higher power of 120 W. This in turn would make it difficult to form a layer of an organometal polymer between the metal oxide film and the substrate surface obtained by the present invention. As a result, close adhesion would be impaired between the substrate surface and the metal oxide film, and properties such as a gas-barrier property and the like of the metal oxide would not be obtained to a sufficient degree.

Like Fukaya et al, Williams et al also fails to disclose executing a low power glow discharge to thereby form a first CVD film on the surface of a substrate, and then executing a high power glow discharge (executed in the same plasma treatment chamber, employing the same organometal and executed at the same frequency) to form a second CVD film on the first CVD film as required by independent claim 27.

Moreover, according to the method disclosed by Williams et al, an SiO₂ film is formed first, foreign matter is then removed from the film and, thereafter, another SiO₂ film is, further, formed on the surface thereof. Since the foreign matter must be removed from the film, the vacuum evaporation cannot be continuously conducted in the same chamber (see present claim 4). Moreover, as noted above, Williams et al does not at all describe varying the output power in forming the SiO₂ film.

Withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 3-5, 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Williams et al in view of Fukaya et al and further in view of U.S. Patent 4,395, 313 to Lindsay et al. Lindsay et al was cited as disclosing a low power in a range of 20-90 watts and a high power in a range of not lower than 100 watts. The reason for rejection was that it would have been obvious to utilize in Williams/Fukaya a low power in a range of 20-90 watts and a high power in a range of not lower than 100 watts as taught by Lindsay et al in order to provide the proper heat for each coating layer.

The rejection should be withdrawn because Lindsay et al discloses forming a film by *electrodeposition*, and has nothing to do with forming a metal oxide film in a *plasma deposition process*.

Lindsay et al discloses a method of forming an adherent electrodeposited coating on an ABS or PPO plastic surface which comprises pretreating the substrate in an RF oxygen glow discharge. As described in the passage at col. 3, lines 27-31 cited by the Examiner, Lindsay et al expose the plastic part to an oxygen plasma for about 3-10 minutes to etch and leave the plastic surface very rich in oxygen. Lindsay et al instruct that at least about 3 minutes is needed to obtain an acceptable effect even at a high power setting of about 100 watts, whereas etching more than about 10 minutes does not seem to provide any significant increased adhesion unless a low power setting such as a power setting below about 30 watts is used.

This is not a disclosure of forming a CVD film by plasma discharge in a gas containing an organometal. Further, contrary to the Examiner's suggestion, Lindsay et al do not disclose executing a low power glow discharge to form a first CVD film on the surface of a substrate and executing a high power glow discharge to thereby form a second CVD film on the first CVD

film. Rather, Lindsay et al merely discloses that the pretreatment time, that is, pretreatment with an oxygen plasma, depends somewhat on the power setting of the oxygen glow discharge. There is no disclosure here of a deposition of first and second CVD films, and there is no disclosure here of executing a low power glow discharge and then a high power glow discharge to deposit respective CVD films as required by present claim 27.

Lindsay et al does not cure the deficiencies of any of Williams et al and Fukaya et al, and therefore the combination of the cited references could never achieve the method of claim 27.

Withdrawal of all rejections and allowance of claims 2-16 and 27 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

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